



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,440	09/29/2003	Yoshitaka Sasaki	117329	6666

25944 7590 08/25/2005

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

WATKO, JULIE ANNE

ART UNIT	PAPER NUMBER
----------	--------------

2653

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/671,440	Applicant(s) SASAKI ET AL.	
	Examiner Julie Anne Watko	Art Unit 2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 13-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11, 12, 20 and 21 is/are rejected.
- 7) ☒ Claim(s) 7-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/29/2003, 06/23/2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>07/29/04, 12/01/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group I, claims 1-12 and 20-21, in the reply filed on March 30, 2005, is acknowledged. The traversal is on the ground(s) that serious burden is lacking. This is not found persuasive because a search of group I would not encompass a search of class 29.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

2. The drawings were received on June 23, 2004. These drawings are not acceptable for the reasons below:

Reference characters 25A and 25a have interrupted reference lines and arrows. Moreover, the interrupted reference lines and arrows point to the same parts as the reference lines and arrows for 25B and 25b.

Reference character "111" has been used to designate two different parts (see Fig. 2).

3. The drawings filed September 29, 2003, are objected to as failing to comply with 37 CFR 1.84(p)(4) for the reasons below:

Reference characters 25A and 25a have interrupted reference lines and arrows. Moreover, the interrupted reference lines and arrows point to the same parts as the reference lines and arrows for 25B and 25b.

Reference character "111" has been used to designate two different parts (see Fig. 2).

Separate figures are not separately labeled (see Figs. 4 and 5, for example).

Art Unit: 2653

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:

On page 25, line 19, the specification recites "Figs. 4A and 4B". This is inconsistent with the appearance of the drawings filed September 29, 2003.

On page 28, line 25, the specification recites "joints 111c". This is inconsistent with the appearance of Fig. 2.

Appropriate correction is required.

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2653

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-2 and 11-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Jiang et al (US PAP No. 2004/0075943 A1).

As recited in claim 1, Jiang et al show a thin-film magnetic head comprising first (P1 and pedestal) and second (P2) magnetic pole groups, magnetically connected to each other, having respective magnetic pole parts opposing each other on a side of a medium-opposing surface (left surface in Fig. 3) opposing a recording medium; a recording gap layer 120 formed between the magnetic pole parts; a thin-film coil 140 insulated from the first and second magnetic pole groups and helically wound about at least one P2 of the first and second magnetic pole groups; and a substrate (inherently) having the first and second magnetic pole groups, recording gap layer, and thin-film coil laminated thereon; the thin-film coil comprising a first conductor group 140 having a plurality of inner conductor parts 142 disposed between the first and second magnetic pole groups, a second conductor group 146 having a plurality of outer conductor parts 146 disposed outside the second magnetic pole group, and a connecting part group 144 having a plurality of connecting parts for connecting the inner conductor parts to the outer conductor parts, the first conductor group including an insulating contact structure 154 for making the inner conductor parts in contact with each other by way of an insulating film, the second conductor group including an insulating contact structure 162 for making the outer conductor parts in contact with each other by way of an insulating film.

As recited in claim 2, Jiang et al show that any of the inner conductor parts 142 is in contact with the first magnetic pole group by way of an insulating film 152.

Art Unit: 2653

As recited in claim 11, Jiang et al show that the insulating film disposed between the inner or outer conductor parts is formed by a laminate of a plurality of alumina films (see ¶ 0019, “preferably formed in layers”, “layers 152 and 156 are preferably sputtered alumina”, “preferably alumina”).

As recited in claim 12, Jiang et al show that the second magnetic pole group is formed by a laminate of two flat magnetic pole layers (134 and 118).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al (US PAP No. 2004/0075943 A1) in view of Kawakami et al (JP 55-12523 A).

Jiang et al show a head as described above.

As recited in claim 3, Jiang et al are silent regarding whether the first and second conductor groups have an arrangement density of the inner conductor parts and outer conductor parts in a direction intersecting the medium-opposing surface increasing from outside the second magnetic pole group toward the second magnetic pole group.

As recited in claim 3, Kawakami et al show a conductor group 8 having an arrangement density in a direction intersecting the medium-opposing surface increasing from outside the second magnetic pole group toward the second magnetic pole group (see Fig. 3A; see also Constitution: "shape in which the conductors 8 are fallen down while closing each other, the magnetic field generated from the conductors 8 is concentrated on the tip of the magnetic pole 5, and accordingly, comparatively small drive current allows steep and strong magnetic field to be fed to the recording media from the tip of the magnetic pole 5").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to increase an arrangement density from outside the second magnetic pole group toward the second magnetic pole group. The rationale is as follows: one of ordinary skill in the art would have been motivated to concentrate a magnetic field from the conductors on the top of the magnetic pole, and accordingly, feed steep and strong magnetic field to the recording media with comparatively small drive current as taught by Kawakami et al.

As recited in claim 4, Jiang et al show that each connecting part (144a-j) is arranged along the medium-opposing surface (bottom in Fig. 7C) on the outside of the second magnetic pole group P2.

Art Unit: 2653

As recited in claim 5, Jiang et al show that the connecting parts (144a-j) are disposed at respective positions distanced from the medium-opposing surface (bottom in Fig. 7C) differently from each other.

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al (US PAP No. 2004/0075943 A1) in view of Takeda et al (JP 05-250636 A).

Jiang et al show a head as described above.

As recited in claim 6, Jiang et al are silent regarding whether each of the inner and outer conductor parts has a variable width structure with a path width gradually expanding from a part corresponding to the second magnetic pole group to the outside thereof.

As recited in claim 6, Takeda et al show inner 4 (see Fig. 2) and outer 7 (see Fig. 5) conductor parts has a variable width structure with a path width gradually expanding from a part corresponding to the second magnetic pole group to the outside thereof (see Constitution: “electric connecting part between the upper and lower stripe conductive films 6 (*sic*), 7 is made wider than the overlapping area of the upper and lower stripe conductive films on the magnetic core 4 (*sic*)”; see also machine translation pages 10-11, last sentence in ¶ 0006, “the width of face of the part for an electric joint and lead wire which are the basic matters of the claim of this invention includes the matter of being larger than the width of face of the part which laps with the magnetic core”).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the conductors of Jiang et al with a gradually expanding path width as taught by Takeda et al. The rationale is as follows: one of ordinary skill in the art would have

Art Unit: 2653

been motivated to improve dependability and yield of a coil by leaps and bounds as taught by Takeda et al (see machine translation, page 6).

12. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al (US PAP No. 2004/0075943 A1).

Jiang et al show a head as described above.

As recited in claim 20, Jiang et al are silent regarding a head gimbal assembly comprising a support, a thin-film magnetic head formed on the support, and a gimbal for securing the support.

As recited in claim 21, Jiang et al teach a recording medium opposing the thin-film magnetic head ("region where a magnetic field that is used to write to the media (not shown) is developed", see ¶ 0020).

As recited in claim 21, Jiang et al are silent regarding a hard disk drive comprising a head gimbal assembly including a thin-film magnetic head.

Official notice is taken of the fact that it was known in the art at the time the invention was made to use a head in a hard disk drive with a head gimbal assembly.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the head of Jiang et al in a hard disk drive with a head gimbal assembly as is notoriously well known in the art. The rationale is as follows: one of ordinary skill in the art would have been motivated to suspend the head near to a reliable, high density magnetic recording medium so as to dynamically store and retrieve data as is notoriously well known in the art.

Allowable Subject Matter

13. Claims 7-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Oshiki et al (JP 55-004734 A) show a magnetic head comprising pole 5, conductor coils 3 and 6, and insulating layer 4, wherein write efficiency and recording density are improved "by separating a conductor coil away from the magnetic pole tip to reduce the influence of the coil magnetic field on the medium."

Bischoff (US Pat. No. 5173826) shows a head with coils of varying thickness, wherein "portions of the coil structure under the operating magnetic portion of the transducer between the pole pieces are relatively thin ... However, the thickness of the coil portions outside of the magnetic yoke area are made substantially thicker to effectively reduce the overall electrical resistance" (see col. 2, lines 51-57).

Koshimoto et al (JP 1-282715 A) show a head comprising ladder type helical coil connected to a spiral type spiral coil (see Fig. 1).

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 2653

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

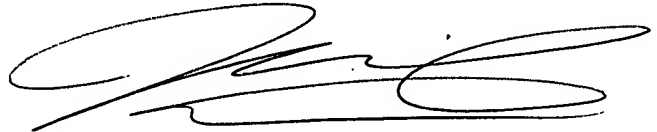
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (571) 272-7597.

The examiner can normally be reached on Tue & Thu until 5, Wed until 3:30, Mon & Fri late.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William R. Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Julie Anne Watko
Primary Examiner
Art Unit 2653

August 10, 2005
JAW

A handwritten signature in black ink, appearing to read 'Julie Anne Watko', with a stylized, flowing script.